Session 1

How Much Longer?

Materials

- Calendars for the current year (1 per student)
- Student Sheet 15 (1 per student)
- Wall calendar (optional)

What Happens

Students use calendars to figure out together how many more days until a particular holiday or event, and how many days until their next birthday. They work on an assessment activity in which they find distances between various time periods on the calendar. Students' work focuses on:

- doing comparisons that involve the question: How much longer?
- using a calendar to find and compare two dates

Ten-Minute Math: Estimation and Number Sense During the next few days, continue to do this activity outside of mathematics class. (See p. 73 for full instructions.) Present problems that combine addition and subtraction, and use some numbers in the hundreds. For example:

300 + 500 – 300 + 200	600 – 300 + 400 – 200
500 – 2 + 500 + 3	400 + 17 – 7 + 700

Remind students that looking over the whole problem first, reordering numbers to make the problem easier, and dealing with the largest numbers first are often good strategies. Students can use the calculator to double-check their mental arithmetic, and their mental arithmetic to double-check the calculator!

Activity

How Much Longer?

Distribute the calendars, one per pair, and ask everyone to find today's date. Talk about the date of an upcoming holiday or event that you've selected. Tell the class they will be figuring out how much longer it is until this important date, and discuss different ways of determining this.

Give students time to work this out with their partners. Students' strategies for counting the days will vary, and to some extent may depend on the date that you've chosen. Some will count by 1's, while others may use more complicated strategies. If you've chosen a date in the same calendar month, students may decide to subtract today's date from the target date. If the date is next month, they might count all the days until the end of this month, then add on the number of days next month until the target date. Some children may be able to make use of 7's as they count. Consider using a large wall calendar and asking a few students to talk about and demonstrate their strategies.

Expect some of the following questions to come up:

Do we count today's date or not?
Do we count the target date or not?
Should we just count all the days in-between now and then?

These are important issues to talk about, because counting strategies really matter here. See the **Dialogue Box**, How Do You Count the Days? (p. 63), for an example of such a discussion.

After students have explained their different ways of counting, you may want to describe the social convention for counting days—that the length of time from today until tomorrow is one day, until the next day is two days, and so on. What we are really doing is counting the "jumps" from one day to the next. However, be sure to acknowledge that other methods students may use are perfectly reasonable, and that people could have decided to do it differently—and perhaps some people *have* done it differently in other places and times. Some students may notice that you get the same count by either counting the jumps, not counting today, or not counting the final day.

Write another important upcoming date on the board—a date that falls sometime in the next calendar month. If students have had trouble with the first date, make this one easier. If it seemed relatively easy, make this one harder. Ask students to work in pairs to figure out how much longer it is until that date. Write their answers on the board and be prepared for some differences. Again, encourage students to share their strategies.

Activity

How Many Days Until Your Birthday?

Students work in pairs to figure out how many more days it is until each of their next birthdays. There's considerable variation in the difficulty of this task. Students whose birthdays are coming up soon may have an easier time than those whose birthdays are six months from now. Students who just had birthdays may think that the task will be hardest for them. The idea of counting backwards and subtracting from 365 often doesn't occur to them.

Note: Some families do not celebrate individual birthdays. Be sensitive to this issue and, as needed, help students choose another date that is significant for them.

When students have finished, choose three or four different months to discuss—perhaps the month after this one, the month before this, and another about six months from now. Ask a few students who have birthdays in those months to share their strategies for finding out how much longer it is until their next birthday. You may want to have them use a wall calendar for showing how they worked.

Activity

Assessment

Counting the Days

Distribute Student Sheet 15, Counting the Days, and have students work on it individually for the rest of the session. They need their calendars to do this. If they do not finish, you may want them to complete the sheet at a later time.

❖ **Tip for the Linguistically Diverse Classroom** Read the problems aloud. On problems 4 and 5, have students add arrows to help them remember whether the birthday is upcoming (→) or just passed (←).

As students work on this activity, walk around and see how they are using their calendars and how they are counting. Here are some questions to consider as you talk to students and as you examine their work later:

- Do students know where to start and stop counting?
- How are they counting? Do they have clear and efficient strategies? For example, do they break time into months and figure out the days in each month, then add them together? Do they rely solely on counting by 1's, even when counting the days in an entire month? In other words, are they counting up to 31 rather than knowing that they can add 31 to the number of days they are accumulating?
- On the question about a birthday that is exactly 3 weeks from today, do they count the time by weeks? If not, do they know that 3 weeks = 21 days and count the days accurately?
- Are they fluent in counting backward (for the birthday that happened recently) as well as forward?
- When figuring out how long it is until August 3, do they combine the days from several months accurately? What kinds of combining strategies do they use and how well do these work?

DIALOGUE BOX

How Do You Count the Days?

The following discussion took place in a classroom that was working on the first calendar activity, How Much Longer? (p. 60).

Everybody put an X on today, the 12th. OK. What's happening next Tuesday?

Michael: We're going on our field trip.

Right—that's the 17th. How many days from today is that?

Various students: Five . . . Six . . . Four.

How did you get your numbers?

Su-Mei: It's five because I counted from each day to the next day. From today till tomorrow is 1, then till Saturday is 2, till Sunday is 3, till Monday is 4, and till Tuesday is 5.

Annie: But today's a day, so we should count it. We should count the 12th, 13th, 14th, 15th, 16th, and 17th. That's six days.

Rashad: It's five days because today's not a full day. It already started.

Well, it's 9:30 now. Suppose we were starting our trip at 9:30 on Tuesday?

Yoshi: That would be four days.

How did you get that?

Yoshi: Tomorrow, Saturday, Sunday, Monday. So, four days.

Hmmm. So we have a lot of disagreement. Some people think we should count the day we start on. Some people don't. Some people think we should count from one day to the next as one day. What if your birthday were on Saturday? How many days away would you say it is?

Tamara: I'd say two, because there's almost all of today to get through, and then all of tomorrow, and then you wake up and it's your birthday.

Jeremy: Yes, it's two, but my reason is different. I'd say from today till tomorrow is one day, and from tomorrow till Saturday is one day, so it's two days away.

Liliana: No, it's just one. I'd say it's one day away because today has already started and so you just count Friday.

Su-Mei: But then what if it was tomorrow? You don't say tomorrow is zero days away!

It's an interesting question, and one not easily answered. Most adults have decided that the way to count days is to count from one day to the next. So that tomorrow would be one day away, Saturday two days away, and Sunday three days away. If we use that method, how long is it from now until our field trip?

Mark: Five days. It really is closest to five days.

Annie: I still say it's six. It is if you count my way!

This conversation highlights an important mathematical issue—whether you are counting objects or intervals. These students are grappling with an important question: do you count days or the amount of time that elapses from one day to another? In this conversation, students are also beginning to think about what is discrete (such as individual objects) and what is continuous (such as measurements).